Those employed in retail food establishments often are taught operations such as inventory control, meat buying, and record keeping. In addition, growing concern about the safety of meats has led employers to offer extensive training in food safety to employees.

Skills important in meat, poultry, and fish cutting are manual dexterity, good depth perception, color discrimination, and good hand-eye coordination. Physical strength is often needed to lift and move heavy pieces of meat. Butchers and fish cleaners who wait on customers should have a pleasant personality, a neat appearance, and the ability to communicate clearly. In some States, a health certificate is required for employment.

Butchers and meat, poultry, and fish cutters in retail or wholesale establishments may progress to supervisory jobs, such as meat or seafood department managers in supermarkets. A few of these workers become meat or seafood buyers for wholesalers or supermarket chains. Some open their own meat or fish markets. In processing plants, meat, poultry, and fish cutters may advance to supervisory positions or become team leaders.

Job Outlook

Overall employment of butchers and meat, poultry, and fish cutters is expected to grow more slowly than the average for all occupations through 2008. Job growth will be concentrated among lower skilled meat, poultry, and fish cutters, as more meat cutting and processing shifts from retail stores to food processing plants. Nevertheless, job opportunities should be available at all levels of the occupation due to the need to replace experienced workers who transfer to other occupations or leave the labor force.

As the Nation's population grows, the demand for meat, poultry, and seafood should continue to increase. Successful marketing by the poultry industry is likely to increase demand for rotisserie chicken and ready-to-heat products. Similarly, the development of lower-fat and ready-to-heat products promises to stimulate the consumption of red meat. Although per capita consumption of fish and other seafood has been constant over the previous decade, population growth is expected to push consumption to record levels in coming years.

Employment growth of lower skilled meat, poultry, and fish cutters—who work primarily in meatpacking, poultry, and fish processing plants—is expected to increase faster than the average for all occupations in coming years. Although much of the production of poultry and fabricated poultry products is performed by machines, the growing popularity of labor-intensive, ready-to-heat goods promises to spur demand for poultry workers. Meat and fish cutters also will be in demand, as the task of preparing ready-to-heat meat and fish goods slowly shifts from retail stores to processing plants. Although the supply of edible ocean fish is limited, advances in fish farming, or "aquaculture," should help meet the growing demand for fish and produce ample opportunities for fish cutters.

Employment of more highly skilled butchers and meatcutters, who work primarily in retail stores, is expected to gradually decline. New automation and the consolidation of the meatpacking and poultry processing industries are enabling employers to transfer employment from higher-paid butchers to lower-wage meatcutters in meatpacking plants. At present, most red meat arrives at grocery stores partially cut up, but a growing share of meat is being delivered pre-packaged, with additional fat removed, to wholesalers and retailers. This trend is resulting in less work for retail butchers and a declining demand for their employment.

Earnings

Butchers and meatcutters had median annual earnings $20,420 in 1998. The middle 50 percent earned between $16,380 and $26,400. The highest paid 10 percent earned more than $34,460 annually, while the lowest 10 percent earned less than $13,140. Butchers and slaughterers who worked at the manufacturing level in the meat products industry earned $18,100 in 1997. Butchers and meatcutters employed at the retail level typically earn more than those in manufacturing. Median hourly earnings in the retail industries employing the largest number of butchers and meatcutters in 1997 were:

Grocery stores	$22,700
Meat and fish markets	19,300
Groceries and related products (wholesale trade)	19,200
Eating and drinking places	15,000

Meat, poultry, and fish cutters typically earn less than butchers and meatcutters. In 1998, average annual earnings for these lower-skilled workers were $16,270, with the middle 50 percent earning between $14,280 and $18,390, the top 10 percent earning over $20,760, and the lowest decile less than $12,780. Meat, poultry, and fish cutters in the meat products industry earned $15,600 in 1997, while those working in miscellaneous food and kindred products earned $12,200.

Butchers and meat and fish cutters generally received typical benefits, including pension plans for those who were union members or employed by grocery stores. However, poultry workers rarely earned substantial benefits. Many butchers and meat, poultry, and fish cutters are members of the United Food and Commercial Workers International Union. In 1998, nearly a third of all butchers and meatcutters were union members or covered by a union contract.

Related Occupations

Butchers and meat, poultry, and fish cutters must be skilled at both hand and machine work and must have some knowledge of processes and techniques involved in handling and preparing food. Other occupations in food preparation that require similar skills and knowledge include bakers, chefs and cooks, and food preparation workers.

Sources of Additional Information

Information about work opportunities can be obtained from local employers or local offices of the State employment service. For information on training and other aspects of this trade, contact:

☛ United Food and Commercial Workers International Union, 1775 K St. NW., Washington, DC 20006.

Forestry, Conservation, and Logging Occupations

(O*NET 73002, 73005, 73011, 73099A, 73099B, 73099C, 73099D, 73099E, 79002A, 79002B, and 79008)

Significant Points

- Workers spend all their time outdoors, sometimes in poor weather and often in isolated areas.
- These jobs are physically demanding and hazardous.
- A small decline is expected in overall employment of forestry and logging occupations.

Nature of the Work

The Nation's forests are a rich natural resource, providing beauty and tranquillity, varied recreational areas, and wood for commercial use. Managing forests and woodlands requires many different kinds of workers. Forest and conservation workers help develop, maintain, and protect these forests by growing and planting new tree seedlings, fighting insects and diseases that attack trees, and helping to control soil erosion. Timber cutting and logging workers harvest thousands of acres of forests each year for the timber that provides the raw material for countless consumer and industrial products.

Generally working under the direction of a professional forester, *forestry technicians* compile data on the size, content, and condition of

forest land tracts. These workers travel through sections of forest to gather basic information, such as species and population of trees, disease and insect damage, tree seedling mortality, and conditions that may cause fire danger. Forestry technicians also train and lead forest and conservation workers in seasonal activities, such as planting tree seedlings, putting out forest fires, and maintaining recreational facilities.

Forest workers are less skilled workers who perform a variety of tasks to reforest and conserve timberlands and maintain forest facilities, such as roads and campsites. Some forest workers, called tree planters, use digging and planting tools called "dibble bars" and "hoedads" to plant tree seedlings to reforest timberland areas. Forest workers also remove diseased or undesirable trees with a powersaw or handsaw and spray trees with insecticides or herbicides to kill insects and to protect against disease. Forest workers in private industry usually work for professional foresters and paint boundary lines, assist with prescribed burning, and aid in tree marking and measuring by keeping a tally of the trees examined and counted. Those who work for Federal and State governments also clear away brush and debris from jurisdictional camp trails, roadsides, and camping areas. Some clean kitchens and rest rooms at recreational facilities and campgrounds.

Other forest and conservation workers work in forest nurseries, sorting out tree seedlings and discarding those that do not meet prescribed standards of root formation, stem development, and foliage condition.

Some forest workers are employed on tree farms, where they plant, cultivate, and harvest many different kinds of trees. Duties vary depending on the type of tree farm. Those who work on specialty farms, such as those growing Christmas or ornamental trees for nurseries, are responsible for shearing tree tops and limbs to control growth, increase limb density, and improve tree shape. In addition, duties include planting, spraying to control surrounding weed growth and insects, and harvesting.

Other forest workers gather, by hand or using hand tools, products from the woodlands such as decorative greens, tree cones and barks, moss, and other wild plant life. Still others tap trees for sap to make syrup or to produce chemicals.

The timber cutting and logging process is carried out by a variety of workers who make up a logging crew. *Fallers* cut down trees with axes or hand-held power chain saws. Usually using gas-powered chain saws, *buckers* trim off the tops and branches and buck (cut) the resulting logs into specified lengths.

Choke setters fasten chokers (steel cables or chains) around logs to be skidded (dragged) by tractors or forwarded by the cable yarding system to the landing or deck area where logs are separated by species and loaded onto trucks. *Rigging slingers* and *chasers* set up and dismantle the cables and guy wires of the cable yarding system. *Log sorters*, *markers*, *movers*, and *debarkers* sort, mark, and move logs, based on species, size, and ownership, and tend machines that debarks logs.

Logging equipment operators on a logging crew perform a number of duties. They drive crawler or wheeled tractors called skidders, or forwarders, which drag or transport logs from the felling site in the woods to the log landing area for loading. They operate grapple loaders, which lift and load logs into trucks, and tree fellers or shears, which cut the trees. They use tree harvesters to shear the tops off of trees, cut and limb the trees, and then cut the logs into desired lengths. Some logging equipment operators use tracked or wheeled equipment similar to a fork lift to load logs and pulpwood off trucks or gondola railroad cars, usually in a sawmill or pulpmill woodyard.

Log graders and *scalers* inspect logs for defects, measure logs to determine their volume, and estimate the marketable content or value of logs or pulpwood. These workers often use hand-held data collection terminals to enter data about individual trees, which can later be downloaded or sent, via modem, from the scaling area to a central computer.

Other timber cutting and logging workers have a variety of responsibilities. Some workers hike through forests to assess logging conditions. Laborers clear areas of brush and other growth to prepare for logging activities or to promote growth of desirable species of trees.

The timber cutting and logging industry is characterized by a large number of small crews of 4 to 8 workers. A typical crew might consist of one or two fallers or one feller machine operator, one bucker, two logging tractor operators to drag cut trees to the loading deck, and one equipment operator to load the logs onto trucks. Most crews work for self-employed logging contractors who possess substantial logging experience, the capital to purchase equipment, and skills needed to run a small business successfully. Most contractors work alongside their crews as working supervisors and often operate one of the logging machines, such as the grapple loader or the tree harvester. Many manage more than one crew and function as owner-supervisors.

Although timber cutting and logging equipment has greatly improved and operations are becoming increasingly mechanized, many logging jobs are still labor intensive. These jobs require various levels of skill, ranging from the unskilled task of manually moving logs, branches, and equipment to skillfully using chain saws, peavies (hooked poles), and log jacks to cut and position logs for further processing or loading. To keep costs down, some timber cutting and logging workers maintain and repair the equipment they use. A skillful, experienced logger is expected to handle a variety of logging operations.

Working Conditions

Forestry and logging jobs are physically demanding. These workers spend all their time outdoors, sometimes in poor weather and often in isolated areas. A few lumber camps in Alaska house workers in bunkhouses or company towns. Workers in sparsely populated western

Forest workers perform a variety of tasks to reforest timberlands and maintain forest facilities such as roads and campsites.

States commute long distances between their homes and logging sites. In the more densely populated eastern and southern States, commuting distances are much shorter.

Most logging occupations involve lifting, climbing, and other strenuous activities. Loggers work under unusually hazardous conditions. Falling trees and branches are a constant menace, as are the dangers associated with log handling operations and use of sawing equipment, especially delimbing devices. Special care must be taken during strong winds, which can even halt operations. Slippery or muddy ground and hidden roots or vines not only reduce efficiency but also present a constant danger, especially in the presence of moving vehicles and machinery. Poisonous plants, brambles, insects, snakes, and heat and humidity are minor annoyances. If safety precautions are not taken, the high noise level of sawing and skidding operations over long periods of time may impair hearing. Experience, exercise of caution, and use of proper safety measures and equipment—such as hardhats, eye and ear protection, and safety clothing and boots—are extremely important to avoid injury.

The jobs of forest and conservation workers are generally much less hazardous. It may be necessary for some forestry aides or forest workers to walk long distances through densely wooded areas to do their work.

Employment

Forestry conservation and logging workers held about 120,000 jobs in 1998, distributed among the following occupations:

Forest and conservation workers	33,000
Logging equipment operators	56,000
Fallers and buckers	18,000
All other timber cutting and related logging occupations	13,000

Most wage and salary logging workers are employed in the logging camps and logging contractors industry. Others work in sawmills and planing mills or for services specializing in the care and maintenance of ornamental trees. Although logging operations are found in most States, the Southeast employs the most, about 40 percent of all logging workers, followed by the Northwest, which employs 25 percent.

Self-employed logging workers account for 1 of every 4 logging workers—a much higher proportion of self-employment than for most occupations.

Most forest and conservation workers are employed by government at some level. Of these workers, about 14,000 are employed by the Federal Government, mostly in the U.S. Department of Agriculture's Forest Service; about 9,000 work for State governments, and 6,000 work for local governments. Most of the remainder work for companies that operate timber tracts, tree farms, or forest nurseries, or for establishments that supply forestry services. Although forest and conservation workers are located in every State, employment is concentrated in the West and Southeast where many national and private forests and parks are located.

Seasonal demand for forestry and logging workers varies by region. For example, in the northern States, winter work is common because the frozen ground facilitates logging. In the Southeast, logging and related activities occur year round.

Training, Other Qualifications, and Advancement

Most forestry and logging workers develop skills through on-the-job training with instruction coming primarily from experienced workers. Logging workers must familiarize themselves with the character and potential dangers of the forest environment and the operation of logging machinery and equipment. However, large logging companies and trade associations, such as the Northeastern Loggers Association and the American Pulpwood Association, offer special programs, particularly for workers training to operate large, expensive machinery and equipment. Often, a representative of the manufacturer or company spends several days in the field explaining and overseeing the operation of newly purchased machinery. Safety training is a vital part of instruction for all logging workers.

Many State forestry or logging associations provide training sessions for fallers, whose job duties require more skill and experience than other positions on the logging team. Sessions may take place in the field, where trainees, under the supervision of an experienced logger, have the opportunity to practice various felling techniques. Fallers learn how to manually cut down extremely large or expensive trees safely and with minimal damage to the felled or surrounding trees.

Training programs for loggers are becoming common in many States, in response to a collaborative effort by the American Forest and Paper Association and others in the forestry industry, to encourage the health and productivity of the Nation's forests. Logger training programs vary by State, but generally include some type of classroom or field training in a number of areas—best management practices, safety, endangered species, reforestation, and business management. Some programs lead to logger certification.

Experience in other occupations can expedite entry into some logging occupations. For example, equipment operators, such as truckdrivers and bulldozer and crane operators, can assume skidding and yarding functions. Some loggers have worked in sawmills or on family farms with extensive wooded areas. Some logging contractors were formerly crew members of family-owned businesses operated over several generations.

Generally, little formal education is required for most forestry and logging occupations. The minimum requirement for a forestry technician or aide is a high school education. Many secondary schools, including vocational and technical schools, and some community colleges offer courses or a 2-year degree in general forestry, wildlife, conservation, and forest harvesting, which could be helpful in obtaining a job. A curriculum that includes field trips to observe or participate in forestry or logging activities provides a particularly good background. There are no educational requirements for forest worker jobs. Many of these workers are high school or college students who are hired on a part-time or seasonal basis to perform short-term, labor-intensive tasks, such as planting tree seedlings.

Forestry and logging workers must be in good health and able to work outdoors every day. They must also be able to work as part of a team. Many logging occupations require physical strength and stamina. Maturity and good judgment are important in making quick, intelligent decisions in dealing with hazards as they arise. Mechanical aptitude and coordination are necessary qualities for operators of machinery and equipment, who often are responsible for repair and maintenance as well. Initiative and managerial and business skills are necessary for success as a self-employed logging contractor.

Experience working at a nursery or as a laborer can be useful in obtaining a job as a forest worker. Logging workers generally advance from occupations involving primarily manual labor to those involving the operation of expensive, sometimes complicated, machinery and other equipment. Inexperienced entrants usually begin as laborers, who carry tools and equipment, clear brush, and load and unload logs and brush. For some, familiarization with logging operations may lead to jobs such as log handling equipment operator. Further experience may lead to jobs involving the operation of more complicated machinery and yarding towers to transport, load, and unload logs. Those who have the motor skills required for the efficient use of power saws and other equipment may become fallers and buckers.

Job Outlook

Employment of forestry, conservation, and logging workers is expected to decline slightly through the year 2008. Any job openings will result from replacement needs. Many logging workers transfer to other jobs that are less physically demanding and dangerous. In addition, many forestry workers are young workers who are not committed to the occupation on a long-term basis. Some take jobs to earn money for school; others only work in this occupation until they find a better-paying job.

Employment of timber cutting and logging occupations is expected to decline slightly. Despite steady demand for lumber and other wood products, increased mechanization of logging operations and improvements in

logging equipment will continue to depress demand for workers. In addition, forest conservation efforts may restrict the volume of public timber available for harvesting, particularly in Federal forests in the West and Northwest, further dampening demand for timber cutting and logging workers.

Little or no change is expected in the employment of forest and conservation workers. Environmental concerns may spur the demand for workers who maintain and conserve our woodlands, especially at the State and local government levels; however, budgetary constraints within the Federal Government and in many State governments are expected to suppress job growth.

Increasing mechanization will have different effects on timber cutting and logging workers. Employment of fallers, buckers, choke setters, and other workers whose jobs are labor intensive should decline, as safer, labor-saving machinery and other equipment are increasingly used. Employment of machinery and equipment operators, such as logging tractor and log handling equipment operators, should be less adversely affected.

Weather can force curtailment of logging operations during the muddy spring season and cold winter months, depending on the geographic region. Changes in the level of construction, particularly residential construction, also affect logging activities in the short term. In addition, logging operations must be relocated when timber harvesting in a particular area has been completed. During prolonged periods of inactivity, some workers may stay on the job to maintain or repair logging machinery and equipment; others are forced to find jobs in other occupations or be without work.

Earnings

Earnings vary depending on the particular forestry or logging occupation and experience, ranging from the minimum wage in some beginning laborer positions to about $25.00 an hour for some experienced fallers. Median hourly earnings in 1998 for forestry, conservation, and logging occupations were as follows:

All other timber cutting and related logging workers	$11.65
Fallers and buckers	11.30
Forest and conservation workers	11.13
Logging equipment operators	11.13

Generally, earnings of more skilled workers, such as yarder operators, are higher than those of less skilled workers, such as laborers and choke setters.

Earnings of logging workers vary by size of establishment and by geographic area. Workers in the largest establishments earn more than those in the smallest establishments. Workers in Alaska and the Northwest earn more than those in the South, where the cost of living is generally lower.

In 1999, forestry technicians and aides who worked for the Federal Government averaged about $31,300 a year.

Forest and conservation workers who work for Federal, State, and local governments and large private firms generally enjoy more generous benefits than workers in smaller firms. Small logging contractors generally offer timber cutting and logging workers few benefits. However, some employers offer full-time workers basic benefits, such as medical coverage, and provide safety apparel and equipment.

Related Occupations

Other occupations concerned with the care of trees and their environment include arborist, groundskeeper, landscaper, nursery worker, and soil conservation technician. Logging equipment operators have skills similar to material moving equipment operators, such as industrial truck and tractor operators and crane and tower operators.

Sources of Additional Information

For information about forestry jobs with the Federal Government, contact:

☛ Chief, U.S. Forest Service, U.S. Department of Agriculture, 14th St. and Independence Ave., SW., Washington, DC 20013.

For information about timber cutting and logging careers and secondary and postsecondary programs offering training for logging occupations, contact:

☛ Northeastern Loggers Association, P.O. Box 69, Old Forge, NY 13420.
☛ Timber Producers Association of Michigan and Wisconsin, P.O. Box 39, Tomahawk, WI 54487.
☛ American Pulpwood Association, Inc., 600 Jefferson Plaza, Suite 350, Rockville, MD 20852.

The school of forestry at your State land-grant college or university should also be able to provide useful information.

A list of State forestry associations and other forestry-related State associations is available at most public libraries.

Inspectors, Testers, and Graders

(O*NET 21911K, 21911M, 21911N, 83002A, 83002B, 83002C, 83002D, 83005A, 83008A, 83008C, 83008D, and 83099)

Significant Points

- For workers who perform relatively simple tests of products, a high school diploma is sufficient; experienced production workers fill more complex precision inspecting positions.
- Like many other occupations concentrated in manufacturing, employment is expected to decline, reflecting the growth of automated inspection and the redistribution of quality control responsibilities from inspectors to other production workers.

Nature of the Work

Inspectors, testers, and graders ensure that your food will not make you sick, your car will run properly, and your pants will not split the first time you wear them. These workers monitor quality standards for virtually all manufactured products, including foods, textiles, clothing, glassware, motor vehicles, electronic components, computers, and structural steel. As quality has become a more central focus in many production firms, daily duties of inspectors have changed. In some cases, their titles also have changed to "quality control inspector" or a similar name, reflecting the growing importance of quality. (A separate statement on construction and building inspectors appears elsewhere in the *Handbook*.)

Regardless of title, all inspectors, testers, and graders work to guarantee the quality of the goods their firms produce. Specific job duties vary across the wide range of industries in which these workers are found. For example, they may check products by sight, sound, feel, smell, or even taste to locate imperfections, such as cuts, scratches, bubbles, missing pieces, misweaves, or crooked seams. These workers also may verify dimensions, color, weight, texture, strength, or other physical characteristics of objects. Machinery testers generally verify that parts fit, move correctly, and are properly lubricated; check the pressure of gases and the level of liquids; test the flow of electricity; and do a test run to check for proper operation. Some jobs involve only a quick visual inspection; others require a longer, detailed one.

Inspectors, testers, and graders are involved at every stage of the production process. Some inspectors examine materials received from a supplier before sending them to the production line. Others inspect